PHILIP MORRIS U. S. A.

INTER-OFFICE CORRESPONDENCE

Richmond, Virginia

**To:** R. Ferguson **Date:** Aug. 18, 1992

**From:** S. S. Yang

**Subject:** Operational Plan - 1993

**Flavor Change on Products**

**Objective:**

Determine the permeability/retention of flavor on products with new packaging films to provide information for shelf-life improvement of products.

**Strategies:**

In an effort to improve the shelf-life of products, analytical methodologies were applied to evaluate new packaging films. The data will be combined with the results of subjective tests to investigate the correlation between the flavor retention and the freshness of products.

Strategy #1: Permeability of flavor components on packaging films.

Tactic 1: Revise a purge/trap/GC procedure or develop other techniques for measuring flavor permeation on films.

Tactic 2: Develop a procedure for measuring permeation of aftercut solution on films.

Tactic 3: Apply Tactics 2 to the whole pack of cigarettes.

Strategy #2: Quantitative analysis of flavor components in cigarettes wrapped with various films and tested under different temperature and humidity environments.

Tactic 1: Adopt or develop analytical methods to handle a large number of samples in a timely manner

Tactic 2: Analyze samples according to the plan.

Tactic 3: Evaluate the correlation between analytical results and subjective test

Strategy #3: Relationship between a perception of "stale" and the water content of the sample.

Tactic 1: Evaluate the results of a current experiment, in which water was carefully moved into and out of samples to examine what, if any, correlation exists. This experiment was initiated in 1991 and will be finished by the end of 1992.

Tactic 2: Define difference in profiles of "stale" and control cigarettes.

Tactic 3: Add back "flavors" to "stale" cigarettes followed by subjective test.

**Resources:** (1) 0.2 to 0.3 man-years for the permeation study.
(2) 0.4 to 0.6 man-years for the analyses of flavors.
(3) 0.3 man-years for "stale".

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